

MAY 1934

GB-05-1934

410,519 COMPLETE SPECIFICATION

410519

2 SHEETS

SHEET 1

SHEET 2

[This Drawing is a reproduction of the Original on a reduced scale.]

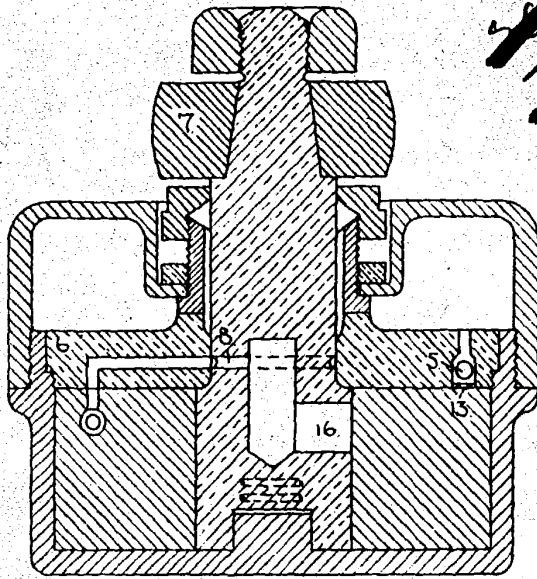


FIG 2

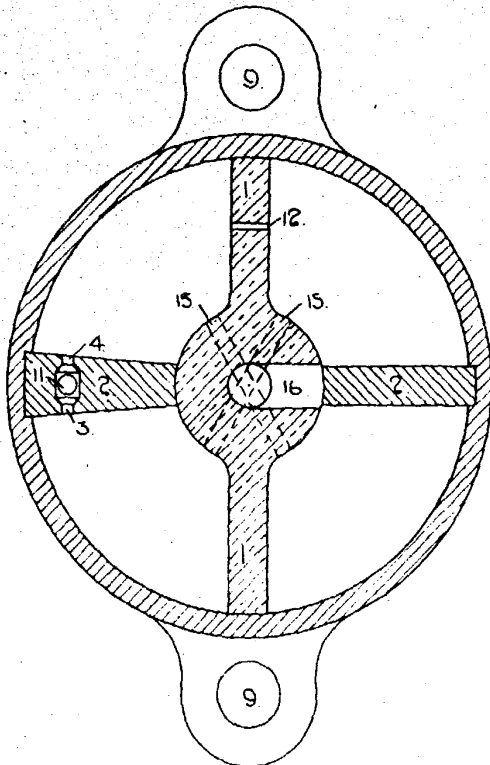


FIG 1

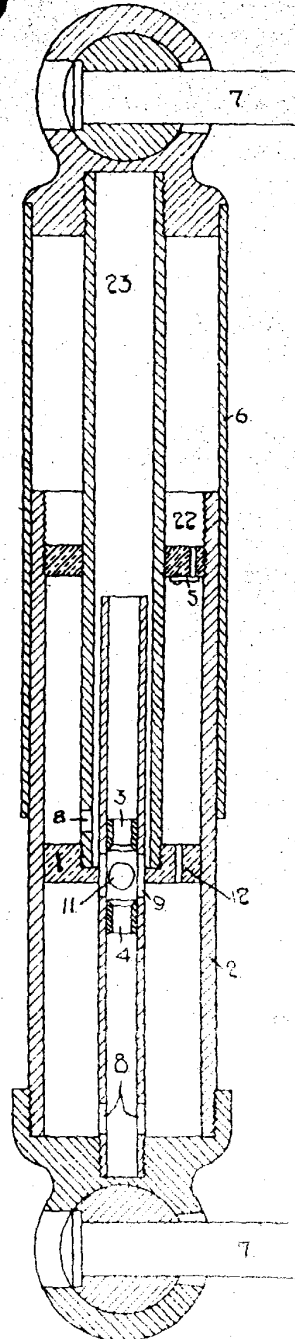


FIG 3



Complete Accepted: May 24, 1934.

## COMPLETE SPECIFICATION.

## Improvements in Shock Absorbers.

EXAMINER'S

COPY

Div. 41

I, ALAN HODGSON, a British Subject, of Stancliffe Old Road, Wortley, near Sheffield, England, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to shock absorbers for use in connection with vehicles to work in conjunction with any type of resilient vehicle suspension, and is designed on the known principle of allowing unrestrained motion of the axle in the directions away from its static position, but which opposes the return of the axle to its normal static position.

I am aware that it has been proposed in a shock absorber which permits unrestrained axle movement away from its initial position but retards the return movement to provide in a cylinder a double non-return valve guided in a partition in the cylinder and controlling parts in two pistons carried by a common piston rod and disposed one on either side of the partition.

According to my invention I provide a hydraulic shock absorber comprising a piston or vanes provided with a leaking orifice and capable of oscillating inside a cylinder a part fixed to which is provided for controlling a passage therein with a double non-return valve which allows unrestrained axle motion in the directions away from its static position but which opposes the return of the axle to its normal position.

One form of this invention is shown in figure 3, wherein the piston 1 provided with small orifice 12 is secured to the chassis attachment 7 and is slidable in the cylinder 2. Attached to a fixed part of the cylinder 2 is the rebound and reaction check mechanism which includes a double non return valve such as non return valves 3 & 4 and ball 11; also a fluid feed non return valve 5 is attached. This shock absorber is depicted in its normal static position from which it will be seen that due to flow passages 8 and 9 and valves 3 & 4 the piston 1 is free to travel either up or down the cylinder 2 away from its mid or static position without

[Price 1/-]

restriction. When the piston 1 has ceased to move towards the extremities of the cylinder 2 and commences to return to its normal position, then the ball will move to the corresponding valve seat either 3 or 4 and offer obstruction as the only path for the fluid is through orifice 12. Dust is excluded from the mechanism by means of a cover 6 and the cylinder 2 is filled with fluid.

Chamber 22 forms an oil reservoir which feeds through valve 5 into the cylinder.

Chamber 23 has air above the oil level and this forms an elastic medium which will accommodate the volumetric change which obtains when piston 1 is depressed.

An alternative form of this invention of the impellor blade type is shown in figures 1 and 2 wherein impellor blades 1 provided with equalising passages 15 have partial rotation inside a cylinder having fixed radial fins 2. One or both of these fins may be provided with a double non return valve 3 and 4 which is operated by ball 11.

When the impellor blades are moved in either direction away from their static position the fluid will travel freely through valve 3 or 4 along passage 8 to the centre of the spindle and through outlet 16.

When the impellor blades are being forced back to the mid position the fluid may only flow through restricted orifice 12 because the valve 3 or 4 will be closed by ball 11.

The cover plate 6 is provided with feed valve 5 and retaining ring 13.

The unit is filled with fluid and is attached at 9 to the vehicle and through the usual crank 7 and connecting link to the axle.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

(1) A hydraulic shock absorber comprising a piston or vanes provided with a leading orifice and capable of oscillating inside a cylinder a part fixed to which is provided for controlling a passage therein

with a double non return valve which allows unrestrained axle motion in the directions away from its static position but which opposes the return of the axle to its normal position.

5 (2) A hydraulic shock absorber as claimed in claim 1 and as illustrated in figs. 1 and 2.

(3) A hydraulic shock absorber as claimed in claim 1 and as illustrated in figure 3. 10

Dated the 22nd day of March, 1933.

ALAN HODGSON.